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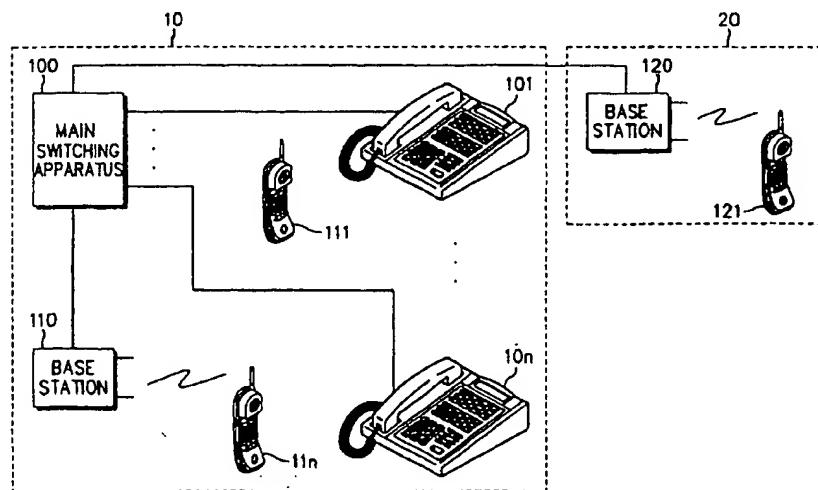
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(54) Abstract Title

Communication system and method

(57) A private radio switching system comprises a cordless handset 21n for communicating with the main switching apparatus 100 of the switching system through a base station 110, and a cordless main telephone set 20n having a display and a plurality of functional keys used to connect with the main switching apparatus. The functional connection of the cordless handset 21n and the main telephone set 20n is accomplished through the steps of transmitting handset operational data generated by the cordless handset to the main telephone set by means of infrared ray (IR), RF or direct contact cordless data communication, displaying a message according to the operational data on the display of the main telephone set 20n, transmitting main set key data entered by the telephone main set 20n to the cordless handset 21n means of the cordless link and and operating the cordless handset 21n to transmit the main set key data to the base station 110 and thence to the main switching apparatus 100.

FIG. 1



At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy.

This print takes account of replacement documents submitted after the date of filing to enable the application to comply with the formal requirements of the Patents Rules 1995

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FIG. 1

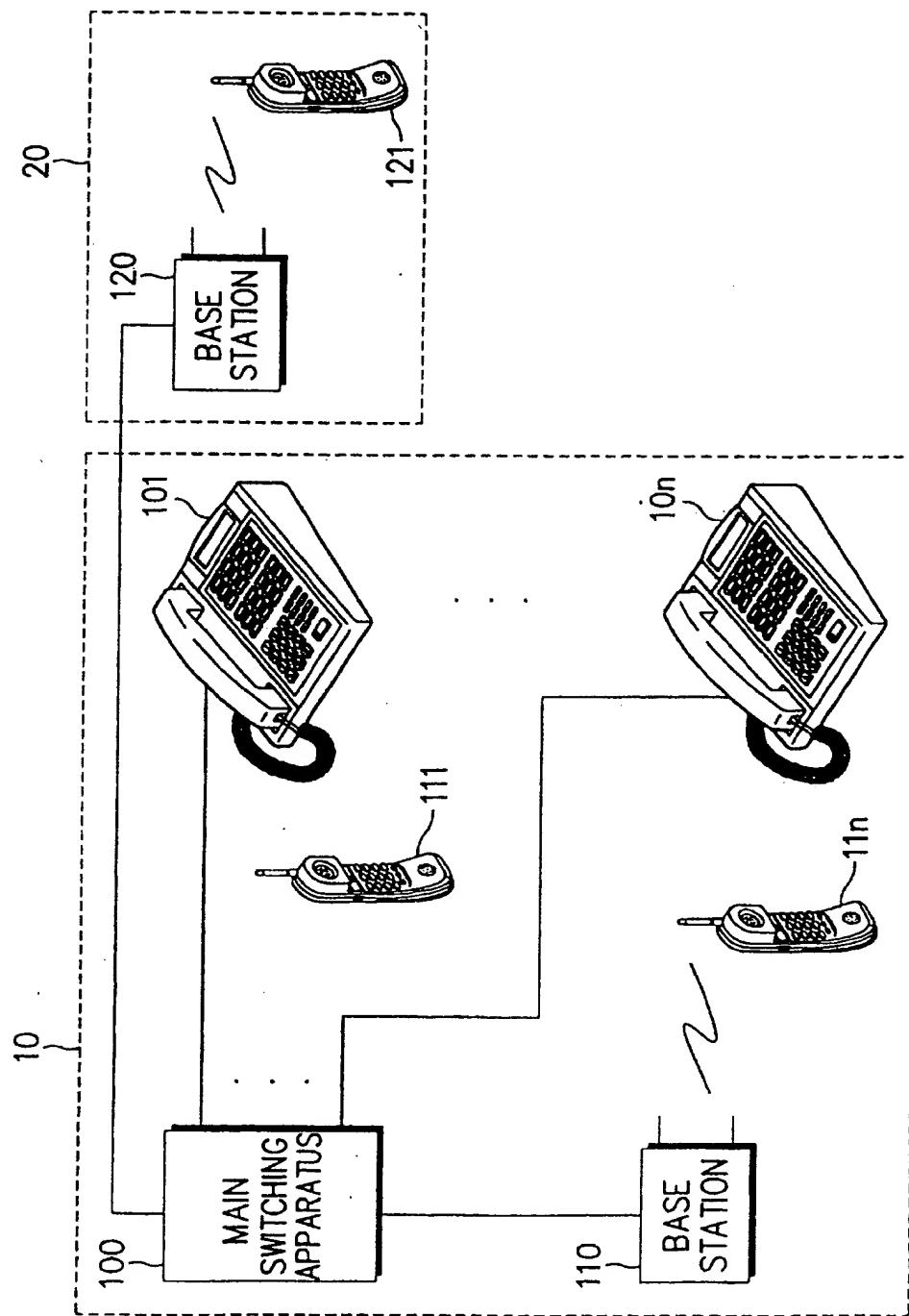
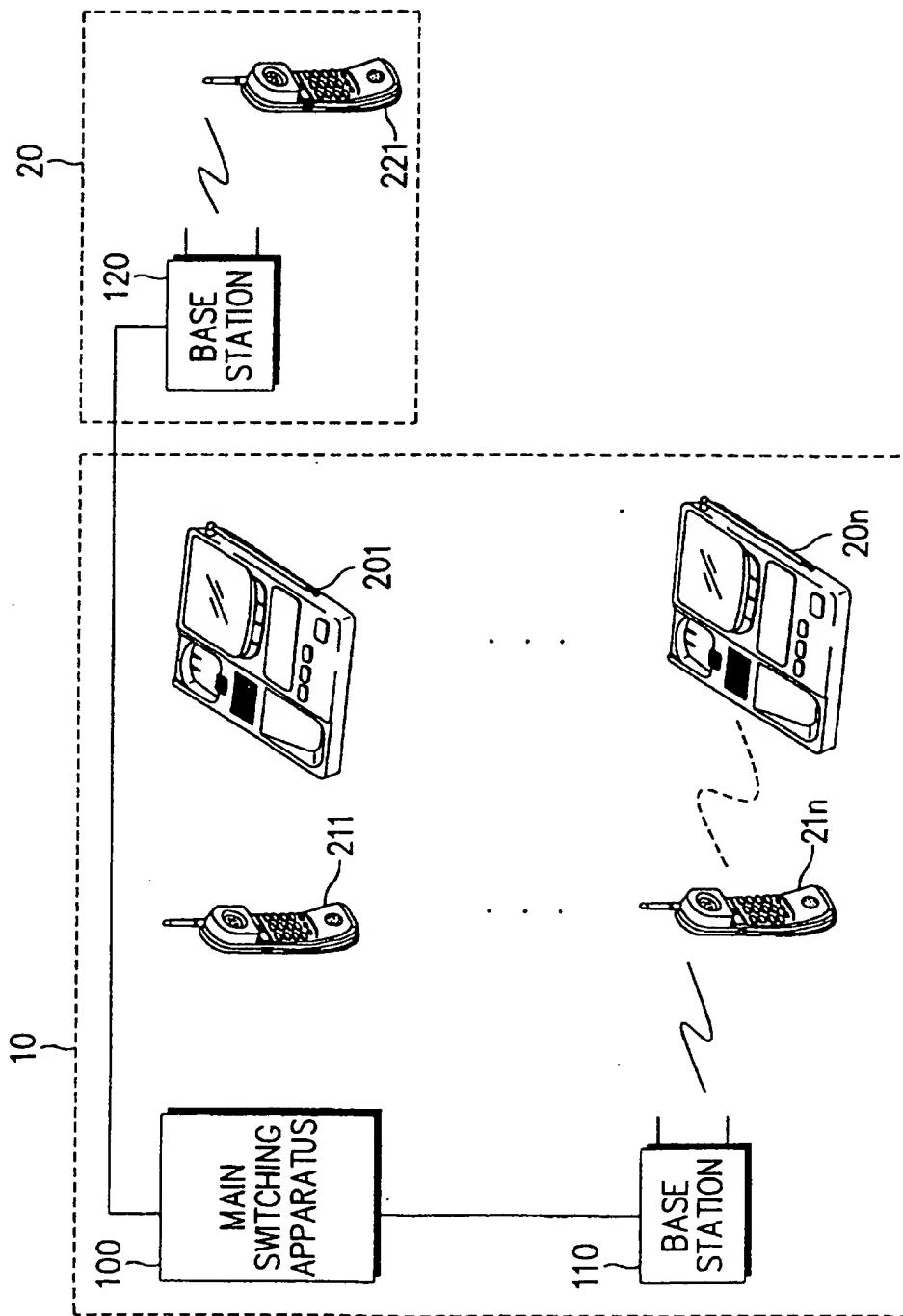


FIG. 2



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**METHOD OF CONNECTING A CORDLESS HANDSET WITH A MAIN
TELEPHONE SET IN A RADIO SWITCHING SYSTEM**

The present invention relates to a private radio switching system, and more particularly to a method of connecting a cordless handset with a main telephone set.

Conventionally, a private radio switching system comprises a main switching apparatus 100, a plurality of base stations 110, 120, main telephone sets 101~10n, and cordless handsets 111~11n, as shown in Fig. 1. The main switching apparatus 100 is connected with the main telephone sets 101~10n by wires, communicating with the cordless handsets 111~11n through the base stations 110, 120. However, since the cordless handset is not linked with the main telephone set, the main telephone set must be provided with a separate wired handset. In addition, the cordless handset with limited functions cannot utilise many additional functions provided by the main telephone set.

Accordingly the present invention provides a communication method for communication system comprising a cordless handset, a corresponding main telephone set, a base station and a main switching apparatus, the method

comprising the steps of transmitting handset operational data generated by the cordless handset to the main telephone set by means of an infrared communication link;

transmitting main key data from the main telephone set to the cordless handset by means of the infrared communication link and

transmitting the main key data to the main switching apparatus via the base station from the cordless handset.

Advantageously, an embodiment of the present invention provides a method of utilising the main telephone set to expand the functions of the cordless handset in a private radio switching system.

Still further, embodiments advantageously provide a method of functionally connecting the telephone main set with the cordless handset in a private radio switching system so that the telephone main set need not be connected with the main switching apparatus by wire.

According to the present invention, a private radio switching system comprises a cordless handset for communicating with the main switching apparatus of the switching system through a base station, and a main telephone set having a display and a plurality of functional keys. The main telephone set is not physically

connected to the main switching apparatus. The functional connection of the cordless handset and the main telephone set is accomplished through the steps of transmitting handset operational data generated by the cordless handset to the main telephone set by means of infrared ray (IR) data communication, displaying a message according to the operational data on the display of the main telephone set, transmitting main set key data entered by the telephone main set to the cordless handset by means of IR data communication, and operating the cordless handset according to the main set key data.

An embodiment of the present invention will now be described, by way of example only, with reference to the accompanying drawings in which:

figure 1 illustrates the structure of a conventional private radio switching system; and

figure 2 is a view to similar to figure 1 but the main telephone set is functionally connected with the cordless handset by wireless communication according to an embodiment of the present invention.

Referring to figure 2, cordless handsets 211~21n are connected with respective main telephone sets 201~20n through radio communication. The cordless handset also communicates with a main switching apparatus 100 through a radio base station 110. The main telephone set 201~20n, not connected with the main switching apparatus 100, in contrast to the conventional main telephone set 101~10n as shown in figure 1, has a display device to display messages received from the cordless handset 211~21n and a plurality of functional keys. The main telephone set 201~20n transmits data entered by the keys to the cordless handset 211~21n, or receives data generated by the cordless handset 211~21n. The data transfer between the main telephone set 201~20n and the cordless handset 211~21n may be achieved by means of IR communication, RF (Radio Frequency) communication, or by contacting input/output ports.

In operation, a phone number can be dialled using the keys of the main telephone set instead of the keys of the cordless handset. The main telephone set 201 transmits the key data representing the phone number to the cordless handset 211 by IR or RF communication, or by contacting input/output ports. Then, the cordless handset 211 transmits the key data of the dialed phone number through

the base station to the main switching apparatus. Further, the cordless handset 211 may perform various additional functions according to key data entered by operating the keys of the main telephone set. Meanwhile, the cordless handset 211 transmits the data representing its present operational state to the main telephone set 201 to display it on the display screen.

Thus, it is possible for the cordless handset to utilise the various additional functions of the main telephone set through the data communication between the cordless handset and the main telephone. Further, since the main telephone set is not directly connected with the main switching apparatus by wire, it may be placed anywhere. In addition, a separate handset need not be connected with the main telephone set by wire. While the present invention has been described in connection with specific embodiments accompanied by the attached drawings, it will be readily apparent to those skilled in the art that various changes and modifications may be made thereto without departing the gist of the present invention.

CLAIMS

1. A communication method for communication system comprising a cordless handset, a corresponding main telephone set, a base station and a main switching apparatus, the method comprising the steps of transmitting handset operational data generated by the cordless handset to the main telephone set by means of an infrared communication link;
transmitting main key data from the main telephone set to the cordless handset by means of the infrared communication link and
transmitting the main key data to the main switching apparatus via the base station from the cordless handset.
2. A communication method for communication system comprising a cordless handset, a corresponding main telephone set, a base station and a main switching apparatus, the method comprising the steps of transmitting handset operational data generated by the cordless handset to the main telephone set by means of an RF communication link;
transmitting main key data from the main telephone set to the cordless handset by means of the RF communication link and
transmitting the main key data to the main switching apparatus via the base station from the cordless handset.
3. A communication method for communication system comprising a cordless handset, a corresponding main

telephone set, a base station and a main switching apparatus, the method comprising the steps of transmitting handset operational data generated by the cordless handset to the main telephone set by means of a contacting input/output ports;

transmitting main key data from the main telephone set to the cordless handset by means of contacting input/output ports; and

transmitting the main key data to the main switching apparatus via the base station from the cordless handset.

4. A communication method as claimed in any preceding claim, further comprising the step of displaying a message on a display of the main telephone set in response to receiving the operational data from the handset.
5. A communication method substantially as described herein with reference to and/or as illustrated in the accompanying drawings.
6. A communication system comprising a cordless handset, a corresponding main telephone set, a base station and a main switching apparatus, the system comprising means for transmitting handset operational data generated by the cordless handset to the main telephone set by means of an infrared communication link;

means for transmitting main key data from the main telephone set to the cordless handset by means of the infrared communication link and

means for transmitting the main key data to the main switching apparatus via the base station from the cordless handset.

7. A communication system comprising a cordless handset, a corresponding main telephone set, a base station and a main switching apparatus, the system comprising means for transmitting handset operational data generated by the cordless handset to the main telephone set by means of an RF communication link;

means for transmitting main key data from the main telephone set to the cordless handset by means of the RF communication link and

means for transmitting the main key data to the main switching apparatus via the base station from the cordless handset.

8. A communication system comprising a cordless handset, a corresponding main telephone set, a base station and a main switching apparatus, the system comprising means for transmitting handset operational data generated by the cordless handset to the main telephone set by means of contacting input/output ports;

means for transmitting main key data from the main telephone set to the cordless handset by means of the contacting input/output ports; and

means for transmitting the main key data to the main switching apparatus via the base station from the cordless handset.

9. A communication method as claimed in any of claims 6 to 8, further comprising the step of displaying a message on a display of the main telephone set in response to receiving the operational data from the handset.
10. A communication system substantially as described herein with reference to and/or as illustrated in the accompanying drawings.
11. A main telephone set for a communication system as claimed in any of claims 6 to 10 or a communication method as claimed in any of claims 1 to 5.
12. A cordless handset for a communication system as claimed in any of claims 6 to 10 or a communication method as claimed in any of claims 1 to 5.



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Claims searched: 1-12

Examiner: John Betts
Date of search: 23 June 2000

Patents Act 1977
Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK CI (Ed.R): H4L (LDJJ, LDRRS, LDRRX) H4K (KBHX)

Int CI (Ed.7): H04M 1/725 1/727 1/73 1/733 1/737 1/738 H04Q 7/26

Other: On-line: WPI, EPODOC, JAPIO

Documents considered to be relevant:

Category	Identity of document and relevant passage	Relevant to claims
X	GB2230922 A (Tokyo Shibaura)	3,4,8,9
A	GB2281677 A (Nippon Electric)	

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.

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